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OpenFIRE – A Web GIS Service for Distributing the Finnish Reflection Experiment Datasets

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The Finnish Reflection Experiment (FIRE) is a land-based deep seismic reflection survey conducted between 2001 and 2003 by a research consortium of the Universities of Helsinki and Oulu, the Geological Survey of Finland, and a Russian state-owned enterprise SpetsGeofysika. The dataset consists of 2100 kilometers of high-resolution profiles across the Archaean and Proterozoic nuclei of the Fennoscandian Shield. Although FIRE data have been available on request since 2009, the data have remained underused outside the original research consortium.

The original FIRE data have been quality-controlled. The shot gathers have been cross-checked and comprehensive errata has been created. The brute stacks provided by the Russian seismic contractor have been reprocessed into seismic sections and replotted. A complete documentation of the intermediate processing steps is provided together with guidelines for setting up a computing environment and plotting the data.

An open access web service “OpenFIRE” for the visualization and the downloading of FIRE data has been created. The service includes a mobile-responsive map application capable of enriching seismic sections with data from other sources such as open data from the National Land Survey and the Geological Survey of Finland.

The AVAA team of the Finnish Open Science and Research Initiative has provided a tailored Liferay portal with necessary web components such as an API (Application Programming Interface) for download requests. INSPIRE (Infrastructure for Spatial Information in Europe) -compliant discovery metadata have been produced and geospatial data will be exposed as Open Geospatial Consortium standard services. The technical guidelines of the European Plate Observing System have been followed and the service could be considered as a reference application for sharing reflection seismic data.

The OpenFIRE web service is available at www.seismo.helsinki.fi/openfire